

On a new species of commensal
porcellanid crab, *Polyonyx*
loimicola sp. nov., from India:
(Crustacea, Anomura, Porcellanidae)

BY

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(With two plates)

The commensal porcellanid crab belonging to the genus *Polyonyx*, dealt with in another paper (Sankolli & Shenoy 1965) belongs to a hitherto undescribed species. The present paper deals with the taxonomic account of this new species.

***Polyonyx loimicola* sp. nov.**

(Plates I and II)

Diagnosis. Carapace somewhat quadrangular, proportion of length to breadth being 3:4; dorsal surface strongly convex longitudinally, smooth with transverse rugae or plications on postero-lateral half behind the cardiac region; carapace regions faintly indicated, lateral margin fringed with matted hairs; front broad, measuring nearly $\frac{3}{4}$ the width of carapace and fringed with matted hairs between the eyes which are remarkably small; rostrum obtuse, scarcely produced; chelipeds unequal, provided with matted hairs; merus with fine transverse rugae on dorsal surface, its lobe slightly produced; carpus broadens distally, its dorsal surface almost smooth except for fine rugae proximally, its convex carina edged with granular bead-like tubercles; propodus with few rugae; fingers of major chela with a gap between them when closed, their tips bent slightly outwards, cutting edge of fixed finger with one big basal tooth and that of movable finger with about 6 teeth, the distal-most being the largest; all the segments of chelipeds matted with hair, merus on the inner surface, carpus thinly along the carina and the inner lower and distal margins, propodus densely matted with hair on the inner lateral surface and along the entire outer lower margin, the

hairs spreading on the entire fixed finger ; finger gap and dactylus fringed with matted hairs ; fingers of smaller cheliped with a very little gap and cross each other when closed ; walking legs thickly matted with hair, merus and carpus unarmed, merus of 3rd leg twice as long as broad and propodus of the same leg more than twice as long as broad and armed with 3 distal spinules on posterior margin, no submedian spinule, dactylus four-clawed ; males with a single pair of pleopods.

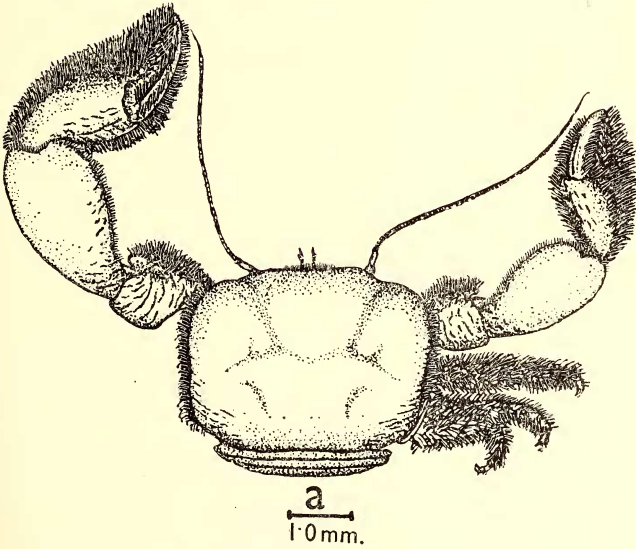
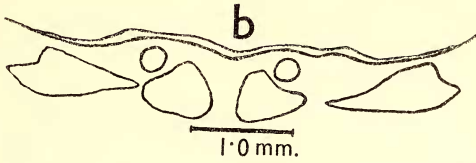
Description. Carapace (Plate I, a) broader than long, proportion of length to breadth being 3 : 4. Dorsal surface strongly convex longitudinally, smooth with transverse rugae or plications on the postero-lateral half behind the cardiac region. Carapace regions faintly indicated. The lateral margin of carapace is fringed with*thickly matted hairs. Front broad, straight in dorsal view, measuring nearly $\frac{3}{4}$ the width of the carapace, and fringed with matted hairs between the eyes, which are remarkably small ; rostrum obtuse, projecting a little and not seen from above (Plate I, b). Antero-lateral margin of carapace takes a fine curve immediately after the base of antennal peduncle ; postero-lateral margin rounded ; posterior margin concave.

Antennule (Plate II, a). First segment smooth, thickened distally ; upper plate flat rather than concave ; antero-inner lobe not produced beyond upper plate ; lateral margins convergent basally.

Antenna (Plate II, b). The first segment broad, elongated, narrowing towards the inner side to an acuminate point. Remaining segments are cylindrical and smooth.

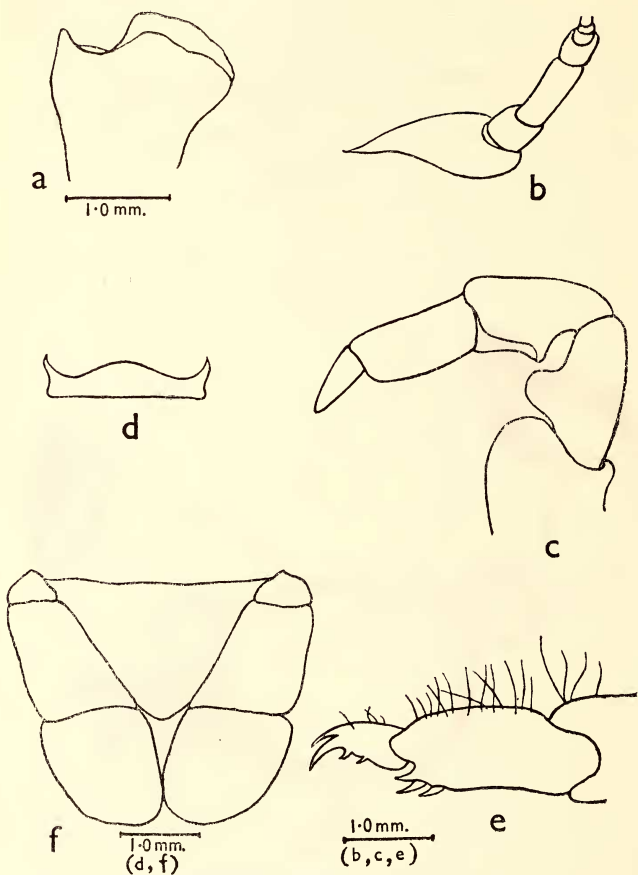
Third maxilliped (Plate II, c). Inner crest of merus rather narrow, though rounded and almost symmetrical ; sternum of third maxilliped shorter than the thoracic sternum (Plate II, d) and its anterior margin is convex. The lateral processes are long and narrow, slightly projecting upwards beyond the anterior margin with slightly concave outer lateral border.

Chelipeds (Plate I, a). Unequal, left or right being larger ; provided with matted hairs. Merus with fine transverse rugae which are most prominent on the dorsal surface and practically absent on the ventral surface. The distal end of the anterior margin so slightly produced that it can hardly be called a carina. Carpus twice as long as broad and much narrower proximally than distally, forming a convex carina on its anterior margin which is edged with granular bead-like tubercles. Dorsal surface smooth except for fine rugae which are present proximally and along the proximal half of the anterior margin. Propodus armed with few rugae, which are prominent about the upper inner side and fade away along the upper outer, inner lower, and ventral surfaces, and towards the fixed finger. The fingers of the major chela leave a gap between them when closed and their tips are bent slightly outwards. Dactylus has one or two longitudinal plications which run almost



Polyonyx loimicola sp. nov.

a. Dorsal view; b. front as viewed from above



Polyonyx loimicola sp. nov.

a. Basal segment of antennule ; b. antenna ; c. third maxilliped ; d. sternum of third maxilliped ; e. third leg ; f. telson

parallel to its anterior margin. All the segments of chelipeds matted with hair, merus on inner surface and carpus thinly along the carina and along the inner lower and distal margins; propodus densely matted with hair along the entire outer margin. These hairs also spread on the entire fixed finger starting from about its base; so also on inner lateral surface of propodus and the finger gap. Dactylus is also fringed with matted hairs. Cutting edge of fixed finger is armed with one big tubercle-like tooth basally and that of the movable finger with six teeth of which the first (basal), fifth, and sixth (distal-most) are longer than the remaining three which are closely set. The distal-most tooth, the largest, is situated slightly ventrally.

Smaller cheliped differs from the major in that the fingers leave very little gap between them and cross each other when closed.

Ambulatory leg (Plate II, e). These successively decrease in size, bearing thickly matted hairs all over except the anterior part of ventral surface, on dactylus hairs are scanty; merus and carpus unarmed; merus of third walking leg about twice as long as wide, and the propodus more than twice as long as wide and armed with 3 spinules on posterior margin, 2 of which are in a pair at the distal end and the 3rd just behind them; dactylus 4-clawed, the accessory claw being smaller than the principal which is the largest, the remaining 2 being very small.

Telson (Plate II, f). 7-plated, the central plate being rather broad.

Male. A pair of pleopods occur in the males.

Material examined. About 50 specimens of varying sizes were collected from Chowpatty, Bombay.

Holotype (:) a ♀ which will, in due course, be deposited in the collection of the Zoological Survey of India, Calcutta.

Measurements. Of the material examined, males ranged from 3.0 to 6.5 mm., non-ovigerous females from 3.00 to 4.25 mm., and ovigerous females from 4.25 to 8.50 mm., in carapace width.

Colour in life. The crabs are light brown in colour, matching well with the inner side of the tube of *Loimia medusa*, the host organism.

Ecology. This species is a commensal of the Annelid tube-worm *Loimia medusa* (Savigny) which is quite common in the intertidal zone. Generally a pair of crabs, male and female, is found inside the tube of the host, the size of the crabs varying with that of the tube. In a pair, the female is usually larger than the male.

Ovigerous females were collected throughout the year except during the monsoon (from June to September) when observations could not be made.

Relationship. The new species belongs to the *P. sinensis* group as defined by Johnson (1958) for the Indo-West Pacific species of *Polyonyx*. Of this group, *P. utinomi* Miyake, *P. sinensis* Stimpson, and *P. cometes* Walker, especially the last two, are more closely related to the new

species. The salient morphological features of these three and the new species are given in Table at pp. 290-1 below.

P. utinomi, which is also a commensal form (Miyake 1943), differs in having the lateral margins of the carapace not hairy; only inner surface of carpus and merus of the chelipeds somewhat hairy; meral lobe large; carpus not broadening distally; no tooth at the base of the cutting edge of fingers of the major cheliped.

As regards *P. sinensis*, the only available information is Stimpson's (1858) very short, rather inadequate description and figure, supposed to be based largely on a male (as cited by Johnson 1958). Shen (1936) redescribed this species but under a different name, *asiaticus*, based on a single ovigerous female, and later Miyake (1943) described a single male as *sinensis*. Miyake, however, does not compare it with Shen's *asiaticus*. My comparison of the new species with the description of *sinensis* as given by Shen and Miyake shows the following differences from the new species: chelipeds and walking legs much less hairy, i.e. mostly in the form of a marginal fringe; the cutting edge of dactylus of major cheliped with not more than a single, blunt tooth at the base; fingers of smaller cheliped not gaping; a sub-median spinule on the lower border of propodus of walking legs, in addition to the 3 distal ones.

Johnson (1958) placed de Man's (1888) *euphrosyne* as a synonym of Walker's (1887) *cometes*. His conclusions were based on a comparison of the descriptions and figures as given by the two authors. But Johnson's statement that de Man's material came from the siphons of the bivalve *Aspergillum* is incorrect. De Man, in his account of the species clearly stated: 'A fine, adult specimen without eggs was found by Dr. Anderson, living along with an annelid in its tube', and commented on the similar commensal habits of this species and Haswell's *P. transversus*, which was found in the siphons of *Aspergillum*. *P. cometes* differs from the new species in the following characters: carpus of major cheliped somewhat different in shape and almost uniformly broad except for the narrowing at either extremity (as per de Man's figure); a prominent meral lobe; a sub-median spinule on the posterior margin of propodus of walking legs; no tooth at the base of the cutting edge of fixed finger; upper surface of carpus and outer surface of palm minutely punctate in major cheliped.

Remarks. Some of the specimens are comparatively less hairy on the sides of the carapace and on the carpus and merus of the chelipeds.

The present account brings the total number of *Polyonyx* spp. known from the Indo-West Pacific region to 16, 14 recognized by Johnson (1958) and another new species, described by me (Sankolli *in the press*).

ACKNOWLEDGEMENTS

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TABLE
SALIENT MORPHOLOGICAL FEATURES OF THE FOUR SPECIES OF *Polyonyx*

Characters	<i>P. loimicola</i> sp. nov.	<i>P. utinomi</i> Miyake	<i>P. sinensis</i> Stimpson (as per Miyake and Shen)	<i>P. cometes</i> Walker (as per de Man)
Carapace				
1. Front	Frontal lobe scarcely produced	Frontal lobe scarcely produced	Frontal lobe scarcely produced	Frontal lobe scarcely produced
2. Dorsal surface	Smooth with transverse rugae or plications on posterior half behind the cardiac region	Smooth, glabrous, and with transverse lines near the lateral margins	Smooth, glabrous to the naked eye, but near the lateral margin with transverse lineolation visible under lens	Smooth and glabrous
3. Lateral margin	Fringed with thickly matted hairs	Not hairy	Not hairy	Extremely hairy
Major cheliped	Merus to dactylus with matted hairs, more dense on propod; fine, transverse rugae, more prominent on merus and few on carpus and propod	Only propod with a line of thick hair on lower margin; merus to propod with delicate, transverse lines on upper surface	Much less hairy, i.e. in the form of a marginal fringe; surface smooth and glabrous	Merus to propod extremely hairy; but upper surface of merus with microscopic transverse lines distally; carpus minutely punctate on upper surface but palm on outer surface only
Merus	Very slightly produced meral lobe	Large meral lobe	Meral lobe absent	Very prominent but minutely denticulate meral lobe
Carpus	Broadens distally and very narrow proximally, its carinate anterior margin convex and edged with granular bead-like tubercles	Rather not broadening distally; its carinate anterior margin almost straight and smooth	Elongated, broadest distally but not very narrow proximally; its carinate anterior margin smooth, convex in its distal half	Almost uniformly broad except at either extremity where it is rather narrow; its carinate anterior margin smooth and slightly convex

TABLE—(continued)
SALIENT MORPHOLOGICAL FEATURES OF THE FOUR SPECIES OF *Polyonyx*

Characters	<i>P. loimicola</i> sp. nov.	<i>P. uinomi</i> Miyake	<i>P. sinensis</i> Stimpson (as per Miyake and Shen)	<i>P. cometes</i> Walker (as per de Man)
Fingers	Gaping, tips slightly bent outwards; cutting edge of fixed finger with one big tubercle-like basal tooth and that of movable finger with about 6 teeth, the distal-most being the largest	Twisted; cutting edge of both fingers armed with small teeth but no large tooth at the base of the cutting edge	Gaping, much twisted; fixed finger armed with a basal tooth; movable finger with not more than a single, blunt tooth at the base	Gaping (de Man's fig. 3, pl. 15, 1888) with arcuated, pointed tips, crossing one another slightly; no large tooth at the base of the cutting edge of the fixed finger though the outer border of the edge is faintly crenulate with the small prominence beyond the middle; outer border of cutting edge of movable finger crenulate and with a small, transverse tooth at the base
Walking legs	Densely hairy	As per Miyake's figure, slightly hairy	Much less hairy, i.e. in form of marginal fringe	Densely hairy
Merus	Unarmed ventrally; that of 3rd leg twice as long as broad	Unarmed ventrally; that of 3rd leg twice as long as broad	Unarmed ventrally; that of 3rd leg twice as long as broad	Unarmed ventrally; that of 3rd leg twice as long as broad
Propodus	3 distal spinules on posterior margin, no submedian spinule	3 distal spinules on posterior margin, no submedian spinule	In addition to 3 distal spinules, a submedian spinule also present	In addition to 3 distal, a submedian spinule also present
Dactylus	4-clawed (2 big + 2 small)	4-clawed (2 big + 2 small)	As per Shen 4-clawed (2 large + 2 small) and as per Miyake 5-clawed (1 principal + 2 accessory + 2 small)	4-clawed (2 big + 2 small)